Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Consumer and Government Affairs Bureau Seeks Comments on "Need for Speed" Information for Consumers of Broadband Services	)	CG Docket No. 09-158
	)	
	)	

Comments of

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May 26, 2011

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We are submitting these brief comments in response to the Public Notice seeking comment on the "Need for Speed" information for consumers of broadband services issued by the Federal Communications Commission (FCC) on April 11, 2011.[2]

In the enclosed, we offer some comments on particular aspects of the FCC's "Need for Speed" notice as individuals with substantial relevant experience in the technical, business, and policy environment that has helped foster and shape the Internet. We are actively engaged in on-going research related to the measurement of broadband performance, and have written on the challenges inherent in any such measurement effort.[3]

In light of the growing recognition that broadband Internet access is basic infrastructure that is essential to our society and economy, we approve of the efforts by the FCC and others to collect and make available better information on the state of broadband infrastructure and services in the United States. We approve of the FCC's efforts to go beyond the collection of data on service availability to begin to focus also on broadband performance metrics, including data on broadband speed measurement. We have welcomed the opportunity to engage with FCC personnel and other analysts in discussions over the past year regarding the deployment of the SamKnows broadband measurement infrastructure in the United States, which we believe adds a valuable new tool to assist in our efforts to collect and better understand broadband performance data.[4]

As the FCC prepares to share the broadband performance information it has been collecting and seeks to prepare and publicize materials that will assist broadband consumers in becoming better informed about their service options and needs, we think it worth mentioning some thoughts about the FCC's role in the marketplace for information about broadband performance metrics.

First, we believe the FCC plays a unique and important role in broadband measurement efforts. The FCC is in the best position within the U.S. government to collect, maintain, and make available statistical data on broadband infrastructure and performance at the national level. As academic researchers, we look to the FCC as an important data source of record for publicly available, granular data that is often not available elsewhere, or if available, only at prices that

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[2] See *Public Notice*, *Consumer and Governmental Affairs Bureau Seeks Comment on "Need for Speed" Information for Consumers of Broadband Services*, CG Docket No. 09-158, Before the Federal Communications Commission, Released April 11, 2011 (hereafter, "Need for Speed" notice).

[3] See, for example, the papers listed at http://mitas.csail.mit.edu, and in particular, "Understanding broadband speed measurements," available at http://mitas.csail.mit.edu/papers/Bauer_Clark_Lehr_Broadband_Speed_Measurements.pdf. The opinions expressed herein and in the papers at the MITAS website are those of the authors alone.

[4] See Official FCC Blog, "Testing for Broadband Speeds," June 23, 2010, available at: http://www.fcc.gov/blog/testing-broadband-speeds.

are too dear for academic research budgets. Even when other, potentially better data is available, the FCC's published data provides a useful and important crosscheck and common reference point.

Second, while the FCC is a key player, we do not expect the FCC to be the primary source of information that will be used by consumers and other market participants to make decisions about their broadband service usage or purchase-related decisions. In a healthy and competitive market, we expect that consumers will look first to service providers, media coverage, consumer research (e.g., Consumer Research Reports), other value-added service providers, and friends and colleagues for information with which to better understand their broadband service options. We expect that broadband-based application and content providers with a vested interest in helping consumers make informed decisions about broadband services will continue to provide advice via the Web, product documentation, and other channels. As with most retail products, the information provided will often have a strategic or subjective bias, and policymakers will need to remain vigilant to protect consumers from misleading advertisements. However, we do not believe that retail markets for broadband services present a serious challenge in this regard, at least at present. Moreover, we believe that competition in the marketplace for broadband data and its interpretation and analysis presents a helpful check on any problems that may arise. Academics like ourselves and other third-party analysts are also key players in the marketplace for broadband data interpretation and analysis, and more so than consumers, are the primary consumers of the statistical data published by the FCC. In times past, telecommunications economists and industry analysts regularly consulted the FCC's ARMIS reporting data; but we would not expect most consumers to have ever heard of it.[5] The fact that most consumers benefit from the FCC's data collection efforts indirectly – filtered through the lens of third-party analysts – contributes to the value of the data.

Third, in light of the preceding two points, we believe it is important that the FCC consider the needs of academics and third-party analysts in its data collection and presentation decision-making. For the folks who will use the data to better understand market dynamics, discern trends, and evaluate market conditions, the more detail, the better. Measuring broadband metrics is complex and the research community is still evolving its understanding of how best to measure, report, and interpret broadband performance. Any pressure to avoid this complexity by over-aggregating the data or eliminating too much detail because of a desire to make it more accessible to the general public should be resisted. Our work has taught us that there is no single best way to measure or report broadband speeds that is appropriate for all contexts. If the FCC data is reported with sufficient detail, then third-party analysts may present different filters and interpretations that are targeted to specific consumer questions. Yes, the FCC may play in that game also, potentially preparing tutorial information to explain the relevance of different broadband metrics, but such efforts are of secondary importance to the FCC's role as the data provider of national record.

Fourth, in reporting detailed and granular data, it will be very important for the FCC to ensure consistency across geographies (e.g., Census Block Groups, States, etcetera), and as much as possible, across time. The latter goal is potentially at cross-purposes with the desire to evolve

[5] http://transition.fcc.gov/wcb/armis/.

metrics over time. As we noted above, we do not believe that broadband service is yet sufficiently commoditized or stable a service that we can determine how best to measure broadband performance. We expect that metrics will need to evolve. Some measures which we may think are important today, may be much less interesting in the future; while other measures we are not collecting today, will be needed in the future. Consistency across geographies and time in data collection and reporting enhances the quality of the data for statistically robust analysis, but will need to be balanced with the need to evolve metrics. Additional detail today that preserves information will make it easier to evolve our performance measurements while maintaining data consistency.

Fifth, we recognize there are differences in the burden and value of reporting data on a more timely basis that depend, in part, on what the data is and how it will be used. On the one hand, data that is collected in an automated fashion (e.g., via web-based surveys, web-crawling software, or via a testing infrastructure such as SamKnows) may be readily updated and made available on a frequent basis. This would prove valuable to researchers seeking large sample data to identify trends and detect data anomalies that might be obscured by less frequent updating. Other data that is sampled less frequently, is more expensive to sample, or is less likely to change quickly (e.g., service provider address data or the number of fixed lines by type of technology), may be reported on a less frequent basis. Furthermore, because of the role that the FCC's data may play as a source of record, it is important that at least once a year, the FCC issue an authoritative update. Such a strategy is already employed for statistical data like the reporting of broadband access lines in service. That data is reported "as of" some standard date such as December 30th, but the report is released only several months later to allow some time for data clean up and presentation. Ideally, the more frequently reported "raw" data and the authoritative reporting of the same data would agree, but in the event it did not, analysts would have a solid basis for looking at trends over time. The need for both frequent timely reporting of certain current data *and* annual reporting of more authoritative data with a moderate lag (say, not to exceed six months) is analogous to what happens in the reporting of certain macroeconomic data such as employment rates. With employment data, the monthly changes that are announced are often of smaller magnitude than the subsequent quarterly statistical adjustments, potentially leading to false conclusions as to even the direction of month-to-month changes in employment rates formed on the basis of current reporting.

Sixth, to make the detailed data useful, the FCC needs to provide full-disclosure of data collection and metric methods. As noted, the design of broadband performance metrics is an active area for research and those of us engaged in this activity need to know the provenance of the data we use and need to understand how summary statistics and measures are designed in order to appropriately interpret such statistics. Our work on speed measurements helped highlight some of the challenges inherent in metric design.[6] In completing that research, we were fortunate to be able to chat candidly with many of the folks who had designed and implemented different test platforms and found the opportunity to understand in a detailed fashion how the tests were performed invaluable to our analysis.

[6] See note 3, above.

Seventh, we recognize the importance of balancing the tradeoffs between seeking more detailed and complete public data and the costs of acquiring such data. In addition to the direct administrative costs imposed on the FCC and the firms supplying the data, there are potential costs associated with distorting market incentives and behavior or with violating valid concerns for confidentiality. For example, the FCC's effort to publicize a specific speed measurement might induce service providers to focus excessive resources on improving their ranking with respect to reported measurements, rather than on enhancing the quality of their service or infrastructure. Broadband performance measurement should be a means to an end – a more robustly competitive and healthy marketplace for broadband services – not an end in itself. Furthermore, we must recognize that the more granular and detailed the data, the more likely it might be used to highlight differences between service providers and to reveal information that providers will justifiably regard as strategically important and confidential. Detailed data may also provide more scope for misinterpretation or misrepresentation (e.g., when ephemeral performance differences are presented as systematic). For the data that the FCC collects that may justifiably be regarded as confidential, the FCC ought to adopt procedures like those adopted by other Federal data managers for allowing controlled access to researchers and other third parties. For example, the Bureau of the Census allows researchers to work with certain firm-level datasets and produce publishable research subject to oversight to ensure that the published research does not allow individual firm data to be identified.

Eighth, we believe that better publicly available data on broadband performance will enhance the health and robustness of broadband service markets, to the benefit of all. Consequently, we hope that the FCC will be able to obtain the data and cooperation it needs from service providers in a way that avoids conflict.[7] Moreover, because service providers and the FCC are not the only sources of relevant data, there will exist additional validation checks to evaluate the quality of any data that is provided voluntarily by service providers. While we do not think that the data collection efforts ought to be overly contentious or burdensome, we recognize the importance of the FCC reserving the right to compel data collection and cooperation if voluntary efforts prove inadequate. Furthermore, we accept that if data must be compelled, that that data may be more likely to be subject to additional confidentiality constraints, and expect that a suitable evaluation of the cost-benefits associated with acquiring the data is undertaken in advance.

In conclusion, let us note that we believe a healthy ecosystem for broadband performance metrics will involve many sources of data and multiple parties interpreting each. We look forward to continuing to work with and benefit from the work of the FCC, acting in its unique role as the data repository of record for national broadband statistics. While we do not expect mass market consumers to be the primary direct users of FCC data, we believe consumers will benefit from the analysis that publicly-available, detailed FCC data will make possible by analysts from across industry, academia, and the media. We expect that the FCC's data will be complemented by a variety of testing efforts sponsored by service, application, and content

[7] In the current round of tests, most providers supplied the subscription speed tier information of the panelists on their networks. This is essential supplementary information that is often difficult for customers themselves to correctly report. Many providers also hosted test servers on their own networks. This produced data that has been very helpful in interpreting and understanding tests run to other locations.

providers, as well as other third-party market research interests. And, we look forward to the evolution and contribution to metrics and measurement research from the further development of test beds and tools like the FCC's deployment of the SamKnows testing infrastructure, and other research efforts underway by organizations like M-Labs,[8] CAIDA,[9] Project BISMark,[10] and MITAS.[11] Herein, we have offered our high-level thoughts on the FCC's broadband performance metric publication efforts (summarized in Table 1); we anticipate offering more detailed thoughts about specific metrics in future publications and, potentially, comments to the FCC.

[8] http://www.measurementlab.net/.

[9] http://www.caida.org/home/.

[10] http://projectbismark.net/.

[11] http://mitas.csail.mit.edu.

Table 1: Some Thoughts about the FCC's "Need for Speed" Reporting

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1. FCC has key role as data repository of record
    - FCC has duty as data repository of record for broadband.
    - Important source for publicly available data for many, especially academics.

2. FCC not the first nor best source of info for consumers
    - Analysts are primary users of FCC data, they interpret for consumers.
    - Consumers access competitive marketplace for market research info.

3. More detail is better
    - More detail is better for analysts.
    - Complexity is inherent. Don't over-aggregate/simplify to make accessible.

4. Consistency is important
    - Consistency across geographic aggregates (CBGs, States, etc.).
    - Consistency across time (but metrics must evolve).

5. Timeliness
    - Rapid updating and publication of performance data that collected automatically (e.g., via SamKnows infrastructure or web-based testing)
    - Annual reporting of statistics of record.

6. Full Disclosure of Methods
    - Analysts need to understand fully data collection and metric methods

7. Need to Balance Benefits v. Costs v. Confidentiality Needs
    - Need to consider direct administrative costs of data management for FCC and providers.
    - Indirect costs may include distorting market incentives: metrics should not become end unto themselves.
    - More granular data is likely to impinge valid confidentiality concerns. Processes exist for allowing analyst access to detailed data so as to preserve confidentiality.

8. Voluntary best
    - More data benefits entire market,
    - Voluntary provision of data best, but regulatory authority to compel if necessary is important
    - FCC is not, nor should be, only source of performance data.